



University of
HUDDERSFIELD

Draft Preliminary Programme
6G and Satellite Communications Workshop
September 26-27, 2023

Venue

3M Building, Firth Street, University of Huddersfield, Queensgate, HD1 3DH, West Yorkshire, UK



Website: <https://www.hud.ac.uk/>

Contact person:

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Programme Schedule

Day 1: Tuesday, September 26th, 2023

09:45-10:45	Registration
10:45-11:00	<u>Opening Message</u> : Professor Alistair Sambell, Pro-Vice-Chancellor International, University of Huddersfield, UK
11:00-11:15	<u>Welcome Message</u> : Professor Pavlos Lazaridis, Head of the 6G and Satellite Communications Centre, University of Huddersfield, UK
11:15-11:45	<u>Keynote Speech 1</u> : Dr Keyur K. Mistry, Mangata Networks UK, 'Interference analysis between NGSO-NGSO satellite constellations'
11:45-12:15	Coffee Break
	Keynote Session 1 – continued
12:15-13:00	<u>Keynote Speech 2</u> : 6G - The Next Hyper-Connected Experience for All. Professor Howard Benn, Samsung Electronics R&D Institute (SRUK), South St, Staines TW18 4QE, UK Since the first commercial launch in 2019, 5G has grown to be the core infrastructure for many industries. It has been used to support everything from high-quality communication to smart factories to vehicle-to-vehicle communication and a whole raft of other new services. Learnings from past 5G deployments and how they are dealt with within 3GPP will be discussed. While 5G is currently being commercialized, industry and academia are beginning research to shape the next generation of communication, namely 6G. In this talk, I will introduce a comprehensive overview of various aspects of 6G, including technical and societal trends, services, requirements, and candidate technologies. In the 6G era, the main users will be both machines as well as humans, leading to many new forms of advanced services, such as truly immersive extended reality, high-fidelity mobile holograms, and digital twins. These new services will require a tremendous amount of real-time data processing, hyper-fast data rates, and extremely low latency. The key candidate technologies to enable this include THz communication and advanced duplex systems. Prof. Howard Benn, has over 30 years of experience in telecommunication sector, specialising in radio-based communications. He was involved in creating

	<p>3GPP and chaired 3GPP RAN 4 from 1998 to 2007. He is currently the Vice President of Communications Research at Samsung Electronics R&D Institute in the UK, managing a team of engineers covering ETSI, 3GPP, and GSMA. He is also involved in EU Horizon 2020 and Horizon Europe program and sits on the UKTIN government advisory committee.</p>
13:00-14:00	Lunch Break
	Keynote Session 2
14:00-14.45	<p><u>Keynote Speech 3: Over-The-Air Testbeds for 6G.</u></p> <p>Professor Tian Hong Loh, National Physical Laboratory, NPL.</p> <p>6G metrology to underpin all aspects from signals, devices to systems is essential for its development, manufacture and deployment. A raft of new technologies is anticipated to be considered to support a significantly increased user density. This talk gives an overview of 5G metrological capabilities and testbeds developed under several UK and EU programmes. The topics to cover include smart antenna, wireless sensor network, and multiple-input-multiple-output testbeds , etc.</p> <p>Prof. Tian Hong Loh is currently a Principal Research Scientist at NPL. He leads work at NPL on a wide range of applied and computational electromagnetic metrology research areas to support the telecommunications industry. He has authored and co-authored over hundred refereed publications and holds five patents. He is currently visiting professor at Surrey University, visiting industrial fellow at Cambridge University, UK representative of URSI Commission A (Electromagnetic Metrology), project coordinator of an EU H2020 co-funded project on 'Metrology for 5G Communications'. His research interests include 5G communications, MIMO, smart antennas, small antennas, metamaterials, body-centric communications, WSN, EMC, and computational electromagnetics. He also has acted on the session chair and technical programme committee for several international conferences, and as technical reviewer for several international journals on these subjects.</p>
15.00-15:45	<p><u>Keynote Speech 4: Tunable antenna design for 6G Communications,</u> Professor Alexandros Feresidis, University of Birmingham, UK</p> <p>Millimeter-wave (mm-wave) technologies have emerged in recent years as a promising solution that will radically enhance the performance of a wide range of electronic systems, including mult-Gbps/Tbps telecommunication systems, powerful radar and imaging devices and highly sensitive sensors. Many of these</p>

	<p>systems require powerful high-gain antennas with the capability to dynamically reconfigure their performance, such as the direction of the main beam, their polarisation or their operating frequency.</p> <p>This contribution will focus on the challenging topic of dynamically reconfigurable antennas for mm-wave and low THz frequencies and will present a new tuning technology applied to multi-layer metasurface-based antennas. The advantages of the proposed technology in terms of low losses, high switching speeds and overall antenna performance will be demonstrated by reporting recent results both in simulations and measurements. The fabrication and implementation at higher mm-wave and THz frequencies using innovative micromachining processes will also be discussed.</p> <p>Alexandros Feresidis is the Head of the Metamaterials Engineering Laboratory, and a Professor in Microwave Engineering in the Department of Electronic, Electrical and Systems Engineering at the University of Birmingham. He is a former Royal Academy of Engineering/ Leverhulme Trust Senior Research Fellow (2013-2014). He leads research on artificial electromagnetic metamaterials, antennas, microfabrication, microwave/mmWave and THz circuits and systems. He is a member of the UK EPSRC Peer Review College and he is on the Editorial Board of IET Microwaves, Antennas and Propagation journal. He recently served as Lead Guest Editor in an IET Special Issue on “Emerging Reconfigurable Antenna Technologies”. He currently leads projects on mm-wave and terahertz antennas for communications and radar systems.</p>
16.00-16:30	Coffee Break
16:30-17:30	<p><u>Panel Discussions 1:</u></p> <p><u>Theme: 6G Communications systems in the THz band</u></p> <p><u>Moderator: Dr Qasim Ahmed</u></p> <p><u>Panelists: TBD</u></p>
19.00	Gala Dinner

Programme Schedule

Day 2: Wednesday, September 27th, 2023

09:45-10:45	Registration
10:45-11:15	<p><u>Keynote Speech 5: Oxford Space Systems</u></p> <p>'Antenna design for space applications' TBC</p>

11:15-11:45	Coffee Break
	Presentations
11:45-12:45	<p>'UAV based antennas and propagation characteristics' by Venkat Kandregula</p> <p>'Simultaneous Localisation and Mapping using mm-Wave (SLAM)' by Bisma Amjad</p> <p>'Deep learning in Licensed Shared Access Networks' by Sadaf Nazneen Syed</p>
12:45-14:00	Lunch Break
	Presentations
14:00-15:00	<p>'Blockchain approach to spectrum management' by Sidra Tul Muntaha</p> <p>'Antenna Array Digital beamforming (BF) using AI' by Haya Al Kassir</p> <p>'Design and optimisation of reconfigurable metasurfaces and graphene-based structures' by Pablo Zapata</p>
15.00-16:00	<p>'Machine learning algorithms for beamforming applications in 6G communications systems' by Ioannis Mallioras</p> <p>'Design and demonstration of video production and distribution in a stadium' by Moatasim Mahmoud</p> <p>'Business models for 6G future wireless networks' by Anita Priyadarshini Durai Pandian</p>
16.00-16:30	Coffee Break
16:30-17:45	<p>'Safe and Secure (S&S) Drone Design and Operation' by Asim Ul Haq</p> <p>'IoT densification for ultra-reliable and low-latency (URLLC) systems' by Syed Salar Sefati</p> <p>'RF propagation and 5G site positioning design' by Ahmed Nor</p> <p>'Intelligent MANO framework for FWN architectures' by Shreya Chari</p>
	END of Workshop